

# Crew Resource Management

Situational Awareness  
Assertiveness  
Decision Making  
Communication  
Leadership  
Adaptability/Flexibility  
Mission Analysis



## Running Out of Runway

By Lt. Eli Burleson

**B**agram Air Base isn't exactly the most hospitable place for aviation. The Afghanistan airfield elevation is just under 5,000 feet MSL, and the runway is just over 9,800 feet long. In the summer, the temperature routinely exceeds 105 degrees, and the temperature in the winter often drops below zero.

Although the base now has a new 11,821-foot asphalt runway, we still were using the old, Russian-built, concrete runway. Nobody knows exactly how long ago the latter was poured by the Soviets, but softball-sized pieces break off every day. Takeoffs and landings are so rough it can be difficult to read your instruments; although, the east side of the north-south runway is a little smoother than the west side. Also, if you trundle off the end of the runway, you come to rest in the middle of old Soviet minefields.

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Our adventure occurred four months into a six-and-a-half-month deployment in support of Operation Enduring Freedom (OEF). Our brief that day was standard, and we were all comfortable with our mission, including crew responsibilities and abort criteria.

We waited in the ready room for a jet to come up. When it was assigned, we read the book, dressed and walked. Start-up was uneventful, but after taxiing to the hold short, we returned to the line to troubleshoot vibrations in the control stick. After sitting in the line for 20 more minutes and finding nothing wrong with the jet, we decided to taxi again. We were cleared straight on to the runway for a back-taxi, position-and-hold, but we still hadn't decided if we would take the jet flying or not.

airspeed indicator slowed its rate of climb. For a split second, the indicator seemed to stop at 95 knots. Part of my brain decided to abort, but as I got ready to call abort over ICS, the indicator jumped to life and quickly rose. I should have aborted but allowed myself to continue, and no one else in the crew called for the abort. After all, it's not uncommon to see Prowler airspeed indicators momentarily stick, right?

Somewhere around the 5-board, the airspeed indicator slowed and paused again at about 125 knots, instead of reading the required takeoff airspeed of 157 knots. The only thing I said over the ICS was an expletive, which quickly was answered with a similar expletive from the senior mission commander sitting in ECMO-3. Fixated on

With thoughts of land mines and fireballs dancing through my head, I pulled back on the stick and hoped for the best.

Once in position, we decided the stick vibrations most likely were caused by an over-serviced nose strut, combined with the extremely rough concrete taxiways and runway. We decided to take the jet airborne.

After sitting in position-and-hold for a moment, we were cleared for takeoff and switched to departure frequency. After completing my engine and flight-control checks, I released the brakes, and off we went. It was a cold day, so we had very good engine performance.

Everything felt and looked normal, but I concentrated on the control-stick shudders, trying to decide if I should abort the takeoff or not. After a moment, I decided the stick was fine and began my normal takeoff scan. The first thing I noticed was the airspeed indicator didn't come off the peg at the normal spot during the takeoff roll. Instead of realizing the first indication of an airspeed-indicator failure, I mistakenly chocked it up to having started from an imposed 300-foot displaced threshold at the Bagram airfield. We had been using this threshold because of construction at the south end of the runway for the last several weeks.

When we reached the 8-board (our calculated line-speed check), the needle was off the peg and showed 80 knots; I had briefed I would abort if the line speed was not 85 knots. I called this information over the ICS but decided to press on with the takeoff, again mistakenly thinking the displaced threshold was responsible for the slow start. Shortly after passing the 8-board, the

airspeed-indicator issue, I immediately started to look for the distance-remaining markers, which are made out of plywood and are very difficult to see, especially when the wind has blown over half of them. In my world of time compression, I couldn't find any of the markers, but I did manage to immediately shift my focus to how far down the runway the long-field arresting gear was.

About 1,000 feet before the arresting gear, I remembered to cross-check our ground speed. As we scooted along at a mere 210 knots, and before I could say, "Don't drop the hook, or we'll rip the gear out of the ground," we were beyond the arresting gear and staring at the end of the runway.

With about 1,500 feet of runway left, I took one more look at the airspeed indicator (140 knots—still not enough to go flying), and one more look at the ground speed (220 knots—45 knots more than our rated tire speed). With thoughts of land mines and fireballs dancing through my head, I pulled back on the stick and hoped for the best. There's no worse feeling in the world than staring at the end of a runway with an airspeed indicator telling you that there's no way you're getting off the deck, and there's no way you are keeping it on the paved surface.

We all breathed a sigh of relief as the jet quite literally leapt off the ground. Flying now, I could feel the adrenaline subside. I also realized I'd been white-knuckling the stick grip.

You have to remember this scenario all took place in a matter of seconds. Still not fully comprehending the situation, I didn't touch a thing. The jet was flying, and I wasn't going to do anything to jeopardize it.

Still dirty, we turned downwind and switched back to tower frequency. We told them we had lost our airspeed indicator, and we were going to orbit overhead the field. Finally, using some CRM, we discussed what we saw on the instruments and what our options were. Having dumped down to an acceptable gross weight, we climbed to 10,000 feet AGL, and performed a slow-flight check to make sure our AOA was fairly accurate, compared to our pitch attitude and groundspeed. We decided we would trust AOA, but we also planned on flying faster than normal. Groundspeed and AOA were used to approximate our indicated airspeed.

After telling tower we would be making an arrested landing (remember the field elevation, and therefore the much faster approach groundspeed), we ran through the descent and landing checklists and turned to final. The aircraft touched down with 173 knots groundspeed, and we uneventfully rolled into the short-field arresting gear.


**D**uring the debrief, we realized we had missed plenty of opportunities to abort the takeoff. However, several unfortunate factors led us down the path we chose. We never factored the displaced threshold into our line-speed check. Losing 300 to 400 feet of runway when you calculate your line speed 1,800 feet down the runway makes it unlikely you'll get a good check. Also, the distance to which we calculated our line-speed check was too short. Our calculated line speed, minus the allowable 10 percent, was 85 knots, a speed at which the EA-6B airspeed indicator is not very accurate. In hindsight, we should have used a 2,800-foot versus 1,800-foot line-speed check to allow for performance deficiencies in the airspeed indicator. We had seen airspeed indicators come off the peg a bit late in earlier flights, and I will abort slow-to-come-off-the-peg: takeoffs for an airspeed indicator, that is.

We were focused on troubleshooting a flight-control gripe while on the takeoff roll. As it turned out, an over-serviced nose strut had caused the stick vibrations. Rough taxi-takeoff surfaces had contributed to the problem, causing the horizontal stabilizer to move up and down. We have a standardized takeoff scan, and I should have focused on it or aborted for the oscillating control stick. We had been lulled into a state of complacency over the previous several months by good jets and simple,

cookie-cutter missions. We hadn't been exposed to any insidious failures or severe systems losses in months, and it caught each of us by surprise. Having emergency-procedures simulators or the occasional minor airborne failure is definitely underrated—they may have kept us on our toes just enough to abort when it still was safe to do so.

Our CRM simply broke down. Each of us in the jet that day kept quiet when we knew something wasn't quite right. While busy trying to figure out specifically what was wrong, we should have been calling for an abort. Each of us had considered an abort at various times during the takeoff roll, but the indicator seemed to correct itself each time just before someone said something. We never talked to each other, besides the initial line-speed check and a couple of expletives, until we were airborne.

Each crew member in the Prowler has access to an airspeed-indicator gauge and also a separate groundspeed reading. We were amazed we took the jet airborne without anyone calling out the failure or calling out a groundspeed cross-reference. We thought we were a very good crew when it came to communication and exercising good CRM. Aborting a takeoff at Bagram is not as safe as at most other airfields. The altitude, runway length, runway conditions, temperatures, mine fields, gross weights, and likelihood of a hook skip, tempt aircrew into taking jets flying when they normally wouldn't, given the same scenario at a different locale.

I want to reemphasize three things every aviator learns in flight school. First, CRM is the most important aspect of flying safety, whether you're single seat, with a wingman, or in a multi-seat Prowler. Most aviators tend to nod off when they hear the acronym DAMCLAS, but pay attention next time you get your annual ground training; it just might save your life some day. Second, pre-mission planning is extremely important. You never can account for every possible scenario, but having the most detailed administrative plan possible makes it easier to flex tactically. Having a thorough brief and sticking to it, as best you can, will help keep you out of trouble. Finally, if you doubt something, there is no doubt. If something just doesn't look or feel right, take immediate action. Don't paint yourself into a corner with only one way out. Everyone loves options, and the only way to make sure those options remain available is to make sound decisions from the start. 

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